Entergy Services, Inc.

AFC Update

Entergy Transmission Power Marketers' Meeting

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Transmission Operational Planning

Houston, TX
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Transmission Service under AFCs

MWHs of Service granted during the period May - August

	Firm PTP	Non-firm PTP	Non-Firm Network	Firm Network
2004	4,908,308	1,756,199	2,435,681	12,185,146
2003	1,713,809	2,187,063	1,556,265	10,265,068

- Based on requests 'queued' during the May – August time period
- Monthly not included; hourly, daily and weekly included
- More service being sold in aggregate, certain individual customers may be adversely affected by increased accuracy and granularity when compared to ATC/GOL

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Discussion of Specific AFC Issues

- Counter-Flow Calculations
- Modeling QF Output
- Hourly Models
- Fluctuations in AFC Values
- Scenario Analyzer
- Non-Firm Service
- Software Enhancements
- AFC Data Available to Customers
- Customer Input Process

Counter flow Calculations

- Counter flow factors are used to properly account for impacts of reservations on flowgate flows
- Primarily used to account for the uncertainty associated with scheduling of reserved service
- Counter flow factors used in Entergy's AFC calculation:

Horizon	Firm	Non-Firm
Operating	100%	70%
Planning & Study	50%	70%

- Initial calculation of base flow includes ALL transactions;
  - Flowgate AFC = Flowgate Rating – $\text{Base Flow}_{\text{adjusted}}$
  - $\text{Base Flow}_{\text{adjusted}} = \text{Base Flow}_{\text{original}} + \text{Counter flow adjustments}$

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Modeling QF Output

- QF "put" complicates modeling generation dispatch
- Because of these tariff rules, Entergy's AFC process currently does not model speculative QF put
- In real-time, QF put can be substantial on Entergy's system, approximately 1,000-2,200 MW per day
- Entergy has sought guidance from FERC on this issue in an AFC compliance filing

Hourly Models

- AFC uses hourly models for first 168 hours versus daily peak under ATC/GOL
- Discrete hourly models reflect changes in generation dispatch during non-peak hours; constraints from non-peak hours can now limit daily service
- For non-firm service, this additional granularity allows Entergy to grant non-firm service during non-constraining hours
- Only daily firm service is available under OATT – no hourly
- Entergy is investigating whether a more granular transmission product would be appropriate in light of the more granular AFC calculations

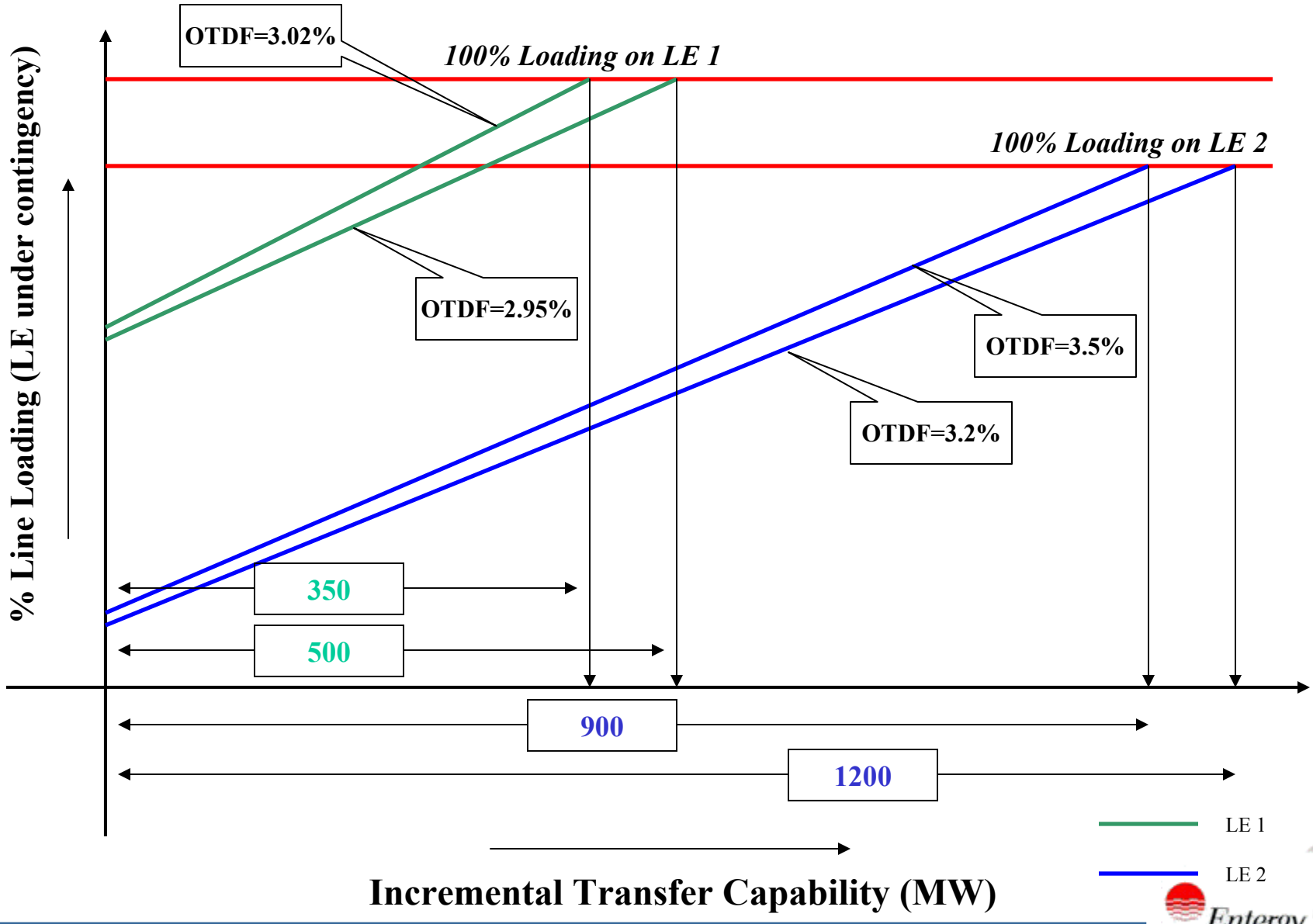
Fluctuations in AFC Values

- AFC software is designed to update calculations much more frequently than the prior ATC/GOL calculations, *i.e.,* Hourly for Days 1-2, four times per day during Days 2/3-31; and weekly for Months 2-18
- Customers should expect changes in AFC values after calculations are updated
- These fluctuations can be significant and do not necessarily indicate a "flaw" in the process
- The process is designed to capture frequent changes in AFC values

Fluctuations in AFC Values (cont.)

- Reasons why AFC values can change significantly during the update process
- Reservations versus Schedules
- Intraday scheduling
- Changes in Other Data Input Files (Resync process)
  - Generation Availability
  - Transmission Outages
  - Additional OASIS Transactions
  - Forecasted Load
- Even where the changes above are not significant standing alone, the collective impact on Response Factors that are close to the 3% OTDF threshold can produce significant changes in power flows

Example Demonstrating the Impact of OTDF changes on ATC



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Scenario Analyzer

- Scenario Analyzer allows customers to submit "proxy" service requests to evaluate the availability of transmission service without actually submitting an OASIS request
- Scenario Analyzer responses are based on the same models used to evaluate service requests; all OASIS service requests in the queue at the time the "proxy" request is submitted are considered
- Entergy is evaluating a second Scenario Analyzer that allows customers to test service availability based only on confirmed OASIS requests

Non-Firm Service

- Under previous ATC/GOL methodology, GOL calculations did not apply to non-firm service requests
- AFC process combined ATC and GOL calculations into a single calculation and applied that calculation to all non-firm service requests
  - Commission twice rejected similar proposal by the MISO to excuse generators within a control area from AFC evaluation for non-firm service requests
  - Entergy also experienced operational problems associated with this practice under ATC/GOL

Recent Software Enhancements

- entergytransmission.com upgraded to display data synchronized with the Scenario Analyzer
  - Data refreshes every 5-8 minutes and is in sync with the analyzer
  - Data source for posting is the same as that used by the analyzer
- Redirect functionality extended to network service reservations

AFC Data Available to Customers

- Significant detail related to the AFC process is posted on Entergy's OASIS
  - AFC Data containing flowgate AFC values and response factors for the Hr1 – Day 31 timeframe
  - Master list of flowgates with EMS/common name, flowgate ratings & PSS/E bus numbers
  - Effective ATC values for download and query on entergytransmission.com
  - Daily peak models available in PTI-PSS/E RAWD format (Version 26)
  - Monthly models in PTI-PSS/E format (Version 28)
  - AFC Manual describing the process in detail
  - Postings can be accessed at https://www.entergytransmission.com/s/capability/AFC/AFC_Links.asp

OASIS Postings

Entergy Transmission
AFC Links

- AFC Data Postings
- AFC Flowgate List Posting
- AFC Manual
- Study Horizon Power Flow Models (RAWD format)
- Operating & Planning Horizon Power Flow Models (RAWD format)

AFC Data File

begin=		10/4/2004 0:00	10/4/2004 1:00	10/4/2004 2:00	10/4/2004 3:00
end=		10/4/2004 1:00	10/4/2004 2:00	10/4/2004 3:00	10/4/2004 4:00
porpod=	PATTRSON/SME				
	flowgate=	SMEP_TIECAPI	SMEP_TIECAPI	SMEP_TIECAPI	SMEP_TIECAPI
	sensitivity=	1	1	1	1
	flowgate=	PATTRSO_PMAX	PATTRSO_PMAX	PATTRSO_PMAX	PATTRSO_PMAX
	sensitivity=	1	1	1	1
	flowgate=	FLRJAX_SLHEB	JSFLO_BOGFRK	JSFLO_BOGFRK	JSFLO_BOGFRK
	sensitivity=	0.1267393	0.1070882	0.1070882	0.1070882
	flowgate=	JSFLO_BOGFRK	JAKFL_JAKGE	JAKFL_JAKGE	JAKFL_JAKGE
	sensitivity=	0.1101646	0.1142743	0.1142743	0.1142743
	flowgate=	JAKFL_JAKGE	JSFLO_MCKFRK	FLRJAX_SLHEB	JSFLO_MCKFRK
	sensitivity=	0.1267352	0.0985533	0.1287131	0.0985533
	flowgate=	JSFLO_MCKFRK	FLRJAX_SLHEB	JSFLO_MCKFRK	FLRJAX_SLHEB
	sensitivity=	0.1033645	0.1287131	0.0985533	0.1287131
	…..				
	…..				
	…..				

fgpath=	GRIMTZ_WDN											
	flow=	160	141	147	168	166	162	149	106	120	100	107
	ttc=	206	206	206	206	206	206	206	206	206	206	206
fgpath=	WILLVB_WEBRC											
	flow=	15	-6	-59	59	39	18	18	14	31	39	10
	ttc=	289	289	289	289	289	289	289	289	289	289	289
fgpath=	B_WLTAL_PERY											
	flow=	-26	-7	-35	1	-7	-6	17	38	41	50	41
	ttc=	199	199	199	199	199	199	199	199	199	199	199
fgpath=	SHEHMAG_ELEH											
	flow=	1076	1330	1283	1247	1269	1250	995	899	958	1045	954
	ttc=	1732	1732	1732	1732	1732	1732	1732	1732	1732	1732	1732

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Effective ATC Query on entergytransmission.com

Address https://www.entergytransmission.com/

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Effective ATC Information

Effective ATC Report: Firm Daily

Select a source or sink GO

Request Report:

Show Reservations Queued last 6 hrs All

Company: All GO

Report generated: 10/5/2004 10:50:32 PM – Effective ATC Data is updated once every 5-8 minutes.

Previous | Next

10/19/2004: Daily Firm Effective ATC

PATH	10/19	10/20	10/21	10/22	10/23	10/24	10/25
Source/Sink	723	723	723	723	723	723	723
	723	723	723	723	723	723	723
	723	723	723	723	723	723	723
	585	585	585	585	585	585	585
	723	723	723	723	723	723	723
	723	723	723	723	723	723	723

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AFC Model Postings

- Since implementation, Entergy has posted approximately 200 monthly models and 21,000 daily peak-hour models
- These postings include the peak-hour model for every day during Day 1-31, and the peak-hour for each month during Month 2-18
- Each of these models contains: load levels, generation dispatch, transmission facility status, net sum of exports and imports, flows on all lines, and voltages on all buses
- Entergy considering requests to post non-peak hourly models, but the number of such models – at least 365,000 per year – will likely make it infeasible
- Hourly models must also be converted from EMS-based format

AFC Customer Input Process

- Entergy's September 23 filing proposed customer input process to discuss flowgate selection criteria and modifications to the list of flowgates
- Entergy is willing to expand this process to include other AFC-related issues
- Process will also involve feedback from market participants on suggested improvements to AFCs
- Meeting expected to be held quarterly at central locations
- Details TBD in future FERC filing

Available Flowgate Capacity

QUESTIONS?